

## CLAIMS

What is claimed is:

1. An adhesive-free, generally planar, tile of substantially rectangular cross-sectional shape, composed of substantially resilient, plastic material with respective top and bottom surfaces and a plurality of edge interlock top structures comprising:  
  
a multi-sided, central portion having integral, elongated first, second, third and fourth peripheral interlock element support edges extending therefrom, said support edges having a generally rectangular cross-sectional shape with top and bottom surfaces and a thickness less than that of said central portion, each of said support edges having respective inner and outer sides with the inner sides thereof integral with different respective sides of said central portion, first and second ones of said support edges intersecting at substantially right angles to form a first pair of said support edges and a first tile corner, third and fourth ones of said support edges intersecting at substantially right angles to form a second pair of said support edges and a second tile corner, the top surfaces of said first pair of said support edges extending substantially flush with the adjoining top surface of said central portion to complete the top surface of the tile and the bottom surfaces of said first edge pair joined to their respective first and second sides of said central portion between the top and bottom surfaces thereof, the top surfaces of said second pair of said support edges extending from and joined to their respective third and fourth sides of said central portion between the top and bottom central portion surfaces, and

the bottom surfaces of said second edge pair extending substantially flush with the bottom surface of said central portion,

a plurality of first sets of female interlock elements spaced-apart on each of said first and second pairs of said support edges, and a plurality of second sets of adjoining male and female disposed between spaced-apart from first sets of elements,

said first and second sets of interlocks on said first pair of said support edges facing the plane of the top tile surface and said first and second interlocks on said second pair of said support edges facing the plane of the bottom tile surface, said male interlocks and their respective support edges facing their corresponding planes, and being spaced therefrom provide substantially flush top and bottom tile surfaces with contiguous tiles having substantially identical and inverted interlock elements, each of the male elements of said first interlock sets comprising a projection having a sidewall portion depending substantially perpendicularly from an underlying support edge,

each of the male elements of said second interlock sets comprising a wall member depending substantially perpendicularly from an underlying support edge and having respective inner and outer laterally spaced sidewalls, said wall member extending transversely between said inner and outer edges of said support edge with the outer sidewall thereof spaced laterally therefrom a distance substantially equal to the width of said second element sidewalls, thereby forming contiguous channel sections as the female interlock elements of said second interlock pair,

said inner sidewall of each of said second interlock set being sized and shaped substantially identically to that of an inverted one of said male interlock elements of said first set to form a plurality of cavitated female interlocks for said first set into which inverted, mating male elements of said first interlock set may be inverted, whereby said tile may be interlocked with contiguous tiles having a substantially identical pattern of interlocks thereon.

2. The tile as claimed in Claim 1, wherein the top tile surface includes a layer of decorative and/or wear resistant material.
3. The tile as claimed in Claim 2, wherein said layer comprises a four sided decorative layer covering the top surface of said central portion and said third and fourth edges.
4. The tile as claimed in Claim 3, wherein said contiguous channel sections are joined to form a continuous open-ended channel that traverses the width of its corresponding support edge substantially from said inner to said outer edge thereof, and vice-versa.
5. The tile as claimed in claim 4, wherein said opposing surfaces forming said channel are curved to form a channel course along a corresponding support edge of alternating configuration.

6. The tile as claimed in claim 5, wherein said sidewall of each of said second elements has a generally rectangular cross-sectional shape with spaced apart sidewalls that form a cavity therebetween.
7. The tile as claimed in claim 6, wherein each of the first element projections comprises a multi-sided lug having a substantially flat free end surface thereof extending substantially parallel to the plane of its respective facing surface.
8. The tile as claimed in claim 7, wherein said lug has three sides joined together to form substantially triangular configuration in plan view.
9. The tile as claimed in claim 8, wherein the apices of the triangular configuration of said lug are rounded to provide said lug with smooth surfaces for facilitating mating with an inverted one of said female cavities.
10. The tile as claimed in claim 9, wherein one apex of each of the lugs adjacent a corresponding rib is spaced outwardly from an adjacent edge of said central portion a distance substantially equal to the width of its corresponding ribs.
11. The tile as claim in claim 10, wherein each of said plurality of lugs is spaced inwardly from its supporting edge by an amount substantially equal to the width of an adjacent channel.

12. The tile as claimed in claim 11, wherein a pair of lugs adjacent the tile corners are inverted relative to adjacent lugs of the same series and mounted in spaced apart juxtaposed relationships.
13. The tile as claimed in claim 12, wherein said pair of lugs at the opposite corners of each of said series are spaced by a channel section of greater width than the width of said channel between intermediately disposed lugs of said series, whereby initial interlocking between mating tiles is facilitated by the lug pair with greater longitudinal spacing therebetween.
14. The tile as claimed in claim 13, wherein a pair of said female elements located at said opposite ends of each element series are inverted with respect to one another and separated by a sidewall rib having a width substantially equal to said width of said channel between said lug pairs.
15. The tile as claimed in Claim 5, wherein the alternating course of said channel is substantially sinusoidal.
16. An adhesive-free, interlocking tile composed of a substantially resilient plastic material and having substantially parallel upwardly and downwardly-facing opposite surfaces, the tile comprising:

a multi-sided, substantially planar central portion and first, second, third and fourth elongated interlock element support edges disposed in endwise relationship around the sides of said central portion, each of said support edges have an inner edge portion depending from a respective side of said central portion and an outer, substantially linear, edge portion defining the outer edge of the tile,

said first and second interlock support edges having longitudinal axes intersecting at substantially right angles to provide a first pair of adjoining interlock edges on said central portion,

said third and fourth edges having longitudinal axes that intersect to provide a second pair of adjoining support of male-female interlocks, edges on another two sides of said central portion,

a plurality of longitudinally disposed first and second structures of said first pair of edges projecting therefrom in an upward direction and the sidewalls of said structures on the surface of said second pair of edges projecting therefrom in a downward direction each of said second structures having outer and inner spaced-apart sidewalls traversing the support edge from which it projects, the spaced-apart outer sidewalls of adjacent ones of each set of said first and second interlock structures and their respective underlying support edge surfaces forming a channel therebetween, and the inner sidewall of each of said second structure additionally forming an open-ended cavity bottoming on its respective support edge surface and shaped substantially as an inverted one of said first structures of each said set, said channel extending

substantially the length of its corresponding support edge and sized and shaped to mate with an inverted, similarly sized and shaped second walled structure of an adjoining tile to form a non-adhesive connection therebetween.

17. The tile as claimed in claim 16, wherein certain ones of said first walled structures have three mutually adjoining sides, two of said three sides disposed opposite one another and joining opposite respective ends of a third side adjacent the inner portions of their corresponding support edges.
18. The tile as claimed in claim 17, wherein the third sides of certain ones of first walled structures extend substantially parallel to the longitudinal support edge axis, and wherein said two structure sides join together inwardly of the outer adjacent edge a distance substantially equal to the width of said channel.
19. The tile as claimed in claim 18, wherein said first and second pairs of interlock edges form oppositely disposed corners of the tile, and further, wherein a pair of said first walled structures are disposed adjacent each of the tile corners and are inverted relative to one another.
20. The tile as claimed in claim 19, wherein said channel is interposed between the corner pair of said first walled structures and has a width greater than that of other portions of the channel.

21. The tile as claimed in claim 20, wherein said channel follows a substantially sinusoidal course along its corresponding edge.
22. The tile as claimed in claim 21, wherein the sidewalls of said second walled structures have a width substantially equal to that of said channel formed thereby.
23. The tile as claimed in claim 22, wherein each of said first walled structures has a generally triangular transverse cross-sectional shape with rounded apices.
24. The tiles as claimed in claim 23, wherein the sidewalls of said second walled structures are continuous and traverse the width of a corresponding edge substantially from the inner to the outer edge portions thereof.
25. The tile as claimed in claim 24, wherein the sidewalls of each of said second walled structures converge adjacent an outer edge and are joined by a basewall extending substantially parallel to the inner portion of a corresponding edge, whereby the three adjoining walls form one of said cavities therewithin with a generally truncated, triangular shape.
26. An edge interlock system for a substantially resilient tile comprising;



a first plurality of male interlock elements disposed at substantially equal first spaced apart distances from one another along a mid-section of said edge and projecting therefrom,

a second plurality of male interlock elements disposed at a second spaced apart distance from one another adjacent one end of the edge and projecting therefrom,

the said second distance being greater than one of said first distances whereby a greater interlock tolerance is provided with inverted, substantially identical interlock systems of adjoining tiles.

27. The system as claimed in claim 26, wherein a first open-sided channel section traverses along said edge between adjacent ones of said first interlock elements, and wherein a second open-ended channel section traverses between said second interlock elements, the second channel section having a greater width than said first channel section and extending from said mid-section.

28. The system as claimed in claim 27, wherein said second interlock elements are disposed adjacent opposite respective ends of said edge.